

Development of Records Management System for Matriculation Colleges in Malaysia

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ABSTRACT

An efficient and effective records and information management is essential to avoid problems which could cause operational failure. A records management system has been developed for selected matriculation colleges in Malaysia. A survey was initiated in order to identify the needs and justify the development of such a system. Survey method, employing questionnaire as the technique to collect data was adopted. The questionnaires were distributed to 120 respondents from October 2009 through February 2010. The return rate is 85.8% (103). The collected data was descriptively analysed using Statistical Package for Social Science (SPSS) version 16.0. Rapid Application Development (RAD) was used in the system development process. User acceptance test (UAT) was conducted to measure the acceptability of the system. The result of the test indicates the potential usage of the system in matriculation colleges throughout Malaysia.

Keywords: System development, Records management system

ABSTRAK

Pengurusan rekod dan maklumat yang cekap dan berkesan adalah satu keperluan bagi mengelak masalah yang dapat menggagal operasi. Sebuah sistem pengurusan rekod dibangunkan bagi beberapa buah kolej matrikulasi terpilih di Malaysia. Tinjauan dijalankan bagi mengenal pasti keperluan dan justifikasi bagi pembentukan sistem berkenaan. Kaedah tinjauan melalui borang soal selidik diguna untuk mengumpul data. Borang soal selidik telah diedar kepada 120 responden mulai Oktober 2009 sehingga Februari 2010. Kadar pemulangan borang ialah 85.8% (103). Data yang dikumpul dianalisis secara deskriptif mengguna Statistical Package for Social Science (SPSS) versi 16.0. Metod Rapid Application Development (RAD) diguna dalam proses pembangunan sistem. Ujian penerimaan pengguna (UAT) dilakukan bagi mengukur penerimaan sistem. Hasil pengujian menunjukkan bahawa terdapat potensi penggunaan sistem ini dalam semua kolej matrikulasi seluruh Malaysia.

Kata kunci: Pembangunan sistem, Pengurusan rekod, Sistem pengurusan rekod

INTRODUCTION

Every organization creates and produces records. These records are kept as evidence that transaction has been carried out (Zawiyah 2009). Systematic records management could give untold advantages to organizations in the form of improved effectiveness, increased standardisation, cost reduction, and help organizations comply with legislation, standard and guidelines (Blue 2010).

The use of information technology (IT) has brought significant changes to records management practices. The ability to manage large volumes of document without the use of this technology in the past is something impressive. However, with the phenomenal records explosion, it has made it inevitable to apply the advanced development in IT.

According to Porter-Roth (2006), organization does not only create, receive and manage records in large volume, but also handle records in various formats, such as e-mail, simple short messages, faxes and so forth. IT has changed the way records are managed, from manual to automation. IT has made it easier to create, distribute,

retrieve, store and dispose (Langemo 2002). The requirement for automating the management of records has led to the development of various information systems.

As the government of Malaysia is striving towards improving the quality of public service delivery, applying automation in public organisations is not an option anymore. In line with this, more electronic systems are used especially in the management of information, documents and records. In the light of this development, Umi and Zawiyah (2009) are optimistic that embarking on automated system for managing records and information is promising in Malaysia.

RESEARCH PROBLEM

The electronic system is widely used for managing records and information in many organizations, especially in the developed countries. An electronic system increased the effectiveness and efficiency of records and information management produced and possessed by an organization.

The benefits of electronic system for managing records and information could be divided into non-financial and financial. This statement has been proven by studies conducted in records and information management handling in various organizations. (Macfarlane 2004). Managing records and information using systems could also help in information clarity, fast delivery, minimum storage space, easier access to data and effective information sharing (Gillies 2009).

The Ministry of Education of Malaysia (MOE) is the ministry with the most number of staff. There are thousands of schools, institutions, education departments and sectors under the MOE's jurisdiction (Ministry of Education, Malaysia 2012). This situation implies that records and information management is deemed important and should not be compromised. Systematic and well-planned approaches have to be used to handle the large volume of records and information for every entity under MOE.

According to the Malaysian Service Circular No. 6 (2005) a government employees are required to continuously attend courses, trainings and workshops for at least seven days in a year (collectively known as training) to improve their competencies. To facilitate the management of these training records MOE introduces *Blue Card* as a method to keep the training records. The *Blue Card* is to be completed upon attending the trainings, as this card serve as a prove to their attendance.

For improved and effective records and information management, a number of departments and divisions under the MOE have taken the initiative to develop automated records management systems. Among these departments and divisions are the State Education Department of the Federal Territory of Labuan that developed the Course Monitoring System (*Sistem Pemantauan Kursus*) for teachers of the schools in the Federal Territory of Labuan, and the Teacher Services Division (*Bahagian Perkhidmatan Guru, BPG*) developed the Staff Personnel Movement System (*Sistem Pergerakan Perjawatan Staf*) for Teacher's Training Institutes all over Malaysia. The use of these systems has proven to increase the effectiveness and the quality of information and records management.

Matriculation colleges are pre-university institutions under the MOE. As with other institutions under the MOE, matriculation colleges are required to comply with the guidelines outlined in the Malaysian Service Circular No. 6 (2005). The staffs of these colleges are required to use the *Blue Card* to record their courses or trainings. However, there is no standardised method for managing these cards. One of the ways of managing these cards are by appointing a specific staff in the unit to monitor and supervise the records for every staff in their unit, while a number of units have also created a specific training file to track their staff records.

The varieties of ways in managing training records in the matriculation colleges have led to the a few problems arise from the practises. There is a case of

missing and misplaced records, difficulties in retrieving records, unsystematic and inefficient records handling at various departments and units and difficulties to monitor the validity of the records. Additionally, the lack of a unified records management process acerbates the problem of meeting the requirement of the Malaysian Service Circular No. 6 (2005). It is also difficult for college's management to make an arrangement to ensure the stipulated trainings quota are met as the particular records have to be accessed manually from various sources. This situation has motivated this research to be carried out, which seeks to find out the prevailing problems and propose a fit-for-purpose implementable solution to those problems.

RESEARCH OBJECTIVE

The objective of the research is to develop an automated system for managing courses and trainings records at matriculation colleges. As part of the system development process, a survey was conducted, involving potential system users from selected matriculation colleges. The objectives of the survey are as follows:

1. Identify current processes pertaining to training and course recordkeeping
2. Identify user requirements (staff of matriculation colleges) for the development of an electronic system to manage training and course records in matriculation colleges.
3. Identify and document the users' understanding of record management through the use of an electronic system
4. To justify the development of electronic system to manage training and course records.

ELECTRONIC SYSTEM VERSUS CURRENT METHOD

A proposed new system or process would have advantages over the current that is now in place. If these advantages are not clearly explained, the merits of the new system or process are likely to be disputed. Table 1 shows the advantages of an electronic system.

RESEARCH METHODS

The study was executed in two stages. In stage 1, a survey was carried to collect data from selected samples of respondents. The main purpose of data collection is to identify the needs, specification and justification for the development of a system to manage course and training records. Survey method was adopted, as it is the best technique to collect data for studies involving large population in various and remote locations (Babbie 2002).

TABLE 1. Advantages of Electronic System Compared to Current Method

Current Method	Electronic System
There is no standard method/practice for managing of training and course records.	A standardise method for managing course and training records is by using the electronic system.
Course and training records are kept and managed manually.	Course and training records will be saved electronically and systematically.
Physical access has to be made to the records if there is a need.	Access to records can be done in any place with internet coverage.
Monitoring of staff course and training records has to be done manually by the Head of Unit or Head of Department.	Monitoring of staff course and training records can be done electronically by the Head of Unit or Head of Department any time.
There is no control in terms of verification for course and training records by the Head of Department.	Head of Department has the authority to affirm his staff's course and training records before the records will be accept as valid.
Report on the number of course and training attended by staff had to be given manually to their head of unit or head of department.	Report on the number of course and training attended by staff can be given and access electronically by head of unit or head of department.
There is no supporting information that can be access easily in making selection for participant for course or training (for Head of Unit / Head of Department).	The decision in making selection for participant for course or training can be supported with the information from the system (for Head of Unit / Head of Department).
Problem of losing the records that is kept manually.	Solving problem of losing the records by using of electronic system.

Questionnaire is employed to provide evidence to support the hypothesis, theory or model of a study (Krathwohl and Smith 2005). Furthermore, questionnaire is easy to administer other than it is able to reduce perception of biasness, where a researcher's personal opinion cannot influence the respondents' answer. Also, the use of questionnaires could minimise the cost of collecting data for a large population and in different locations (Walonick 2000).

In Stage 2, an automated system was developed adopting a system development life cycle methodology (SDLC). Analysis and design phase is very important in a system development process. Analysis and design was performed to identify the purpose(s) of the system and what can be achieved by using of the system as the tool to solve the problems. Analysis was also done to investigate how the system interacts with outside entities and the entities in the system. System design was developed based on needs identified from the analysis done. The design of the system also produced a high-level design

and a low-level design as a blueprint for solving problems (Bentley & Whitten 2007).

In a dynamic environment, analysis and design of the system must be flexible and able to meet the ever-changing needs of all electronic systems. There are four main phases in the process of system analysis and design: planning phase, analysis phase, design phase and implementation phase (Satzinger et al. 2007).

System development life cycle (SDLC) approach was used to develop the system. This approach was selected as it is capable in accelerating the process of system development. One variations of SDLC that could expedite the process of system development is the Rapid Application Development (RAD) method (Satzinger et al. 2007). Thus, RAD method was used in the system development where some of the processes were tailored to suit the needs of the development process. Table 2 displays the phases and objectives for each phase during analysis and design.

TABLE 2. Phases and objectives of system analysis and design

Phase	Objective
Project Planning	<ol style="list-style-type: none"> 1. Identify the scope of the system 2. Ensure the project can be implemented 3. Develop implementation schedule, resources and budgets for projects
Analysis	<ol style="list-style-type: none"> 1. Understanding and documenting the importance of the development to the organization 2. To document the need for the system
Design	<ol style="list-style-type: none"> 1. Designing the system based on the needs identified and decisions made in the analysis phase
Implementation	<ol style="list-style-type: none"> 1. Develop, test, and install a reliable information system to be use 2. Ensure the system works as planned and can provide the advantages to the user as it is supposed to

DATA ANALYSIS FROM THE SURVEY

The collected data was analysed using SPSS version 16.0 (the software package, *Statistical Package for Social Science (SPSS) version 16.0*). Descriptive statistical analysis was used to explain quantitatively the findings of the phenomenon being studied. Quantitative analysis is comparatively easier to understand, however, this does not mean descriptive statistics is simpler as compared to other types of statistics (Abd Rahim 2009).

The analyses identified a number of findings about management of electronic records and information in matriculation colleges as shows in Table 3. However, for the purpose of this report only information related to the justification for the development of the system is emphasised.

Analysis of data on the application of automated system for managing records shows that 44 respondents (42.7%) realise about the endeavour, 40 respondents (38.8%) claim that they are ignorant about it while 19

respondents (18.4%) are not sure of the use of such a system. This shows that most respondents are not aware about the application of automated system for managing records.

Additionally, analysis on the respondents' view about the advantages of using automated system for managing course and training records shows that 82 respondents (79.6%) agree that there are advantages for using such an application. The needs for the development of an automated system for managing course and training records of the staff at matriculation colleges was identified by means of questionnaire. Questionnaire are used with the objective to identify the needs and fit-for-purpose of the development of an automated electronic system for managing course and training records in matriculation colleges. Analysis shows that 90 respondents (87.4%) agree that the development of the system is essential for managing course and training records of the staff at matriculation colleges. Thus, the development of an automated system is appropriate and timely.

TABLE 3. Management of electronic records and information in matriculation colleges

Question	Variable	(%)	N
Knowledge about the use of electronic system in managing records	Yes	42.7	44
	No	38.8	40
	Not Sure	18.4	19
	Total	100	103
View of the advantages of the usage of electronic systems for managing course and training records.	Yes	79.6	82
	No	2.9	3
	Not Sure	17.5	18
	Total	100	103
The suitability for the development of electronic systems for managing course and training records for organisation	Yes	87.4	90
	No	3.9	4
	Not Sure	8.7	9
	Total	100	103

USER ACCEPTANCE TEST (UAT) FOR COURSE AND TRAINING RECORDS SYSTEM

The ultimate aim in developing any information system is the usability and acceptance of the system. A good system must not only operate according to the specification but must also be accepted by user.

The UAT was carried out on 20 users, each with different access and authority levels. Users are required to test each function in the system according to their access level. A brief explanation about the objectives and functions of the system was given before the UAT session. At the end of the session, questionnaires were distributed to obtain feedback from users. A Likert scale is used.

FINDINGS OF THE UAT ANALYSIS

Data from the UAT were analysed using SPSS version 16.0 (the software package *Statistical Package for Social Science version 16.0*). Table 4 shows the results of the analysis.

Analysis of the system's functionality shows that 20% of users strongly agree and 80% agree that the system works according to specifications set forth in its development objectives. For the system's safety features 15% of users strongly agree, 70% agree while 15% are unsure that the system has the necessary security features to operate.

The user-friendly interface is one of the most important features in every system that is developed. The interface is one of the factors that will lead to the

continuous use of systems by users. Analysis shows that 40% of users strongly agree and 60% of users agree that the system has a user-friendly interface.

Every system has its development objectives. However, the most important objective for every system is the suitability to implement the system in an actual operational environment and the effectiveness of the system in providing solution. Analysis shows that 30% of users strongly agree and 70% of users agree that the system is suitable for implementation in the organisation.

Error can occur during the system development process and during its operation. A system need to have a maintenance schedule to avoid unnecessary error that will disrupt its operation (Satzinger et al. 2007). An analysis of errors in the system shows that 75% of users agree and 25% users are unsure that the system has no errors that could disrupt its operation. The system needs to have a longer period of usage for the users to identify any error in the system. However, as a prototype the system is working as targeted. Improvement and enhancement could be done to the system as the need arises.

Analysis of the system's development objective shows that 30% of the users strongly agree and 70% of the users agree that the system has achieved the targeted objectives as briefed before the UAT session.

It can be concluded that there is a potential to manage course and training records systematically and effectively by using an automated record and information management system as compared to the current practices. Improvement and customisation could be made to the system for implementation in matriculation colleges.

TABLE 4. User acceptance testing analysis

Question	Variable	(%)	N
System works according to the specifications	Strongly Agree	20	4
	Agree	80	16
	Total	100	20
System has the necessary security features	Strongly Agree	15	3
	Agree	70	14
	Not Sure	15	3
	Total	100	20
System has a user-friendly interface	Strongly Agree	40	8
	Agree	60	12
	Total	100	20
System is suitable to be use in the organisation	Strongly Agree	30	6
	Agree	70	14
	Total	100	20
System does not has error that will interfere operation	Agree	75	15
	Not Sure	25	5
	Total	100	20
System has achieved the objectives of the development	Strongly Agree	30	6
	Agree	70	14
	Total	100	20

CONCLUSION

The study identifies that automated system has the potential in penetrating many aspects of management and administration as it could improve the efficiency and effectiveness of organisation. This is beneficial in improving organisation's accountability and transparency, which in turn help to remain competitive. The application of automated system for managing records and information is still at its infancy. Conventional methods are still very much in use. The study highlights the potential use of automated system for managing records and information in matriculation colleges, which could be extended throughout the entire nation.

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